

## SOME SETOSE SAPROBIC PYRENOMYCETES ON OLD BASIDIOMYCETES

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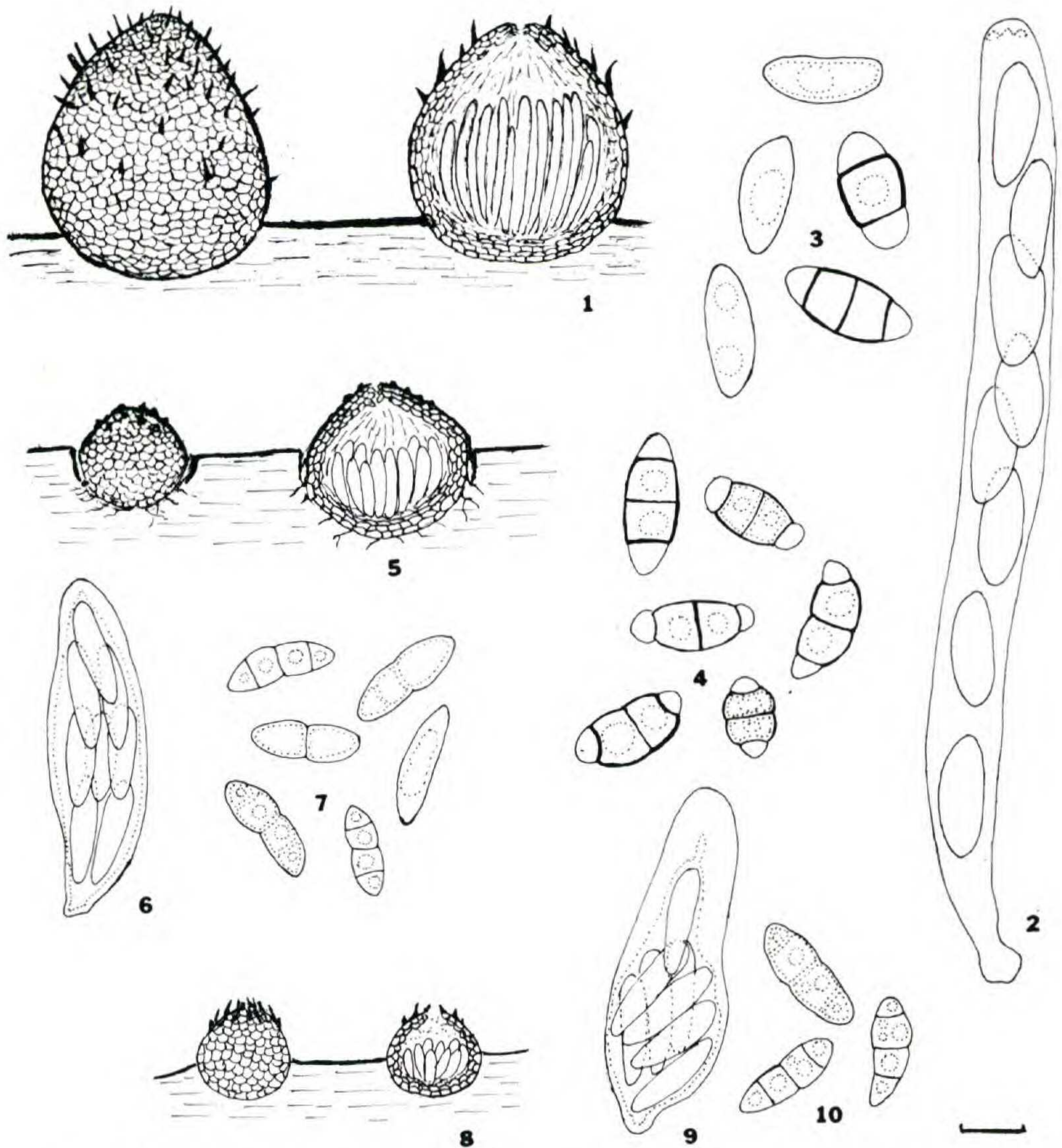
Effete basidiocarps of species of thelephores and polypores serve as substrate for a number of ascomycetaceous fungi. Among these are several which have brown, three-septate ascospores,  $10-17 \times 3-6 \mu\text{m}$  in size, borne in dark, setose ascocarps. Recent investigations show that at least three species of Ascomycetes are involved. One species has unitunicate asci in erumpent-superficial, setose perithecia, and symmetric, elliptic ascospores the end cells of which are pallid in contrast to the dark mid cells. This species fits the concept of *Litschaueria corticiorum* (v. Höhnel) Petrak.

*Litschaueria corticiorum* (v. Höhnel) Petrak, Ann. Mycol. 21: 275. 1923. Figs. 1-4.

*Helminthosphaeria corticiorum* v. Höhnel, Sitzungsber. Kaiserl. Akad. Wiss. Math.-Naturwiss. Abt. 1, 116: 109. 1907.

Perithecia black, immersed at first, becoming erumpent-superficial, globose ovoid,  $180-330 \mu\text{m}$  diameter,  $220-440 \mu\text{m}$  high, scattered or gregarious, collapsing cupulate or pinched in at sides on drying, apex short conic, pore periphysate; wall light brown in lower part, darkened toward apex, composed of several layers of compressed cells,  $15-22 \mu\text{m}$  wide, bearing scattered setae over the surface, setae light to dark brown, 1-celled or septate,  $40-130 \mu\text{m}$  long,  $4-6 \mu\text{m}$  wide near base and tapered to pointed apex. Asci  $70-110 \times 6-7.5 \mu\text{m}$ , cylindric, short stipitate, unitunicate, apex rounded-truncate, apical annulus shallow, refractive, nonchitinoid, nonamyloid, asci 8-spored or less; paraphyses numerous, narrow, ca.  $1 \mu\text{m}$  wide, branched and anastomosed above asci. Ascospores  $10-17 \times 4-6 \mu\text{m}$ , elliptic or elliptic-fusoid, symmetric, straight or inequilateral or slightly curved, (0-, 1-, 2-) 3-septate, not constricted at septa, mid cells brown, end





Figs. 1-4. *Litschaueria corticiorum*: 1. Perithecia in surface view and in section; 2. Ascus; 3. Ascospores from type collection; 4. Ascospores from North American specimens. Figs. 5-7. *Herpotrichiella porothenia*: 5. Ascocarps in surface view and in section; 6. Ascus; 7. Ascospores. Figs. 8-10. *Herpotrichiella spinifera*: 8. Ascocarps in surface view and in section; 9. Ascus; 10. Ascospores.

Standard line =  $75\mu\text{m}$  for figures 1, 5, 8;  $7.5\mu\text{m}$  for remaining figures.



cells hyaline or light brownish, with one, rarely two, globules in each cell, wall smooth, uniseriate in the ascus.

On old basidiocarps of *Peniophora*, *Corticium*, *Stereum*, and *Polyporus* spp., Europe, North America.

Material examined: **EUROPE**: *Peniophora cremea*, "Langenschönbickler Donauauen bei Tulln, Niederösterreich", June 1905, v. Höhnelt (FH, type of *Helminthosphaeria corticiorum*). **NORTH AMERICA**: **Maine**: *Polyporus versicolor*, Flagstaff Lake Road, Franklin Co., 7 Sept 1971, Barr 5903b (MASS); **New York**: *Polyporus pargamenus*, woods, NE Cranberry Creek, west side Sacandaga Reservoir, Fulton Co., 1 Oct 1970, Rogerson et al. 70-195 (NY); **Illinois**: *Stereum ostrea*, Funk Grove, Univ. of Illinois Timber Woods, McLean Co., 13 Aug 1965, Rogerson (NY); **Delaware**: *Corticium* sp., Wilmington, 15 Nov 1894, Commons 2667 (NY); **North Carolina**: *Stereum* sp., along Toxaway River near junction with Bear Wallow Creek, Transylvania Co., 29 July 1961, Petersen & Rogerson (NY); *Stereum* sp., along Scotsman Creek, branch of Chattooga River, Bull Pen Road, Macon Co., 3 Aug 1961, Petersen & Rogerson (Rogerson 61-39) (NY); *Stereum* sp., along Corbin Creek, Branch of Whitewater River, Transylvania Co., 9 Aug 1961, Petersen & Rogerson (NY); *Stereum* sp., Lake Johnson Park, Wake Co., 12 Nov 1972, Menge 622 (MASS); **South Carolina**: *Stereum* sp., 3.2 miles south of state line, 4 miles south of Upper Falls of Whitewater River, Oconee Co., 14 Aug 1961, Petersen & Rogerson (NY, MASS).

Frequently setae similar in appearance to the perithecial setae occur scattered over the substrate surface. In the Maine collection (Barr 5903b) the setae on both perithecia and tubes of the substrate fungus are interspersed with conidiophores which are phialidic at the pallid apex; conidia are  $9-10 \times 3-3.5 \mu\text{m}$ , hyaline, elliptic-cylindric, slightly curved, 1-septate, and adhere together in small clumps. This conidial fungus agrees with the descriptions of *Cylindrotrichum oligospermum* (Corda) Bon. The connection between conidial and perithecial fungi is suggested but has been neither proved nor disproved.



The type specimen of *H. corticiorum* is rather immature, and many of the asci contain cytoplasm only. Most of those asci which appear to be mature contain one-celled brown ascospores and only a few of the ascospores are septate. This von Höhnel (1907) noted in describing the species. Petrak (1923) also described the ascospores as 0- to 1- and finally 3-septate. Von Höhnel's species is similar in all other respects to the North American specimens. There seems no doubt of the disposition of these later and better-developed collections. Both von Höhnel and Petrak compared this species with *Helminthosphaeria clavariarum* (Desm.) Fuckel. *H. clavariarum* is parasitic and forms a subiculum on species of Clavariaceae. Perithecial walls are soft and fleshy, asci have a chitinous apical annulus, and the ascospores are one-celled with a germ pore at each end. This fungus belongs in the Sordariales (Parguay-Leduc, 1961), perhaps in its own family (Lundqvist, 1972). *Litschaueria corticiorum* on the other hand is a member of the Trichosphaeriaceae of the Xylariales.

Petrak (1940) reduced *Melanostigma* Kirschstein, with the type species *M. porothenia* (Berk. & Curt.) Kirschst., to synonymy with *Litschaueria corticiorum*, noting that Kirschstein's fungus was surely identical with von Höhnel's species, although the name *Sphaeria porothenia* Berk. & Curt. was not necessarily so. *Sphaeria porothenia* is one of the other two species which is commonly found on old basidiocarps.

The other two species have bitunicate asci in immersed or partially erumpent ascocarps, and somewhat asymmetric, inequilateral, fusoid-clavate ascospores, with all cells evenly pigmented. Of these two species, one has minute thin-walled ascocarps (95-102  $\mu\text{m}$  diameter) with a tuft of short, one-celled setae at the apex around the pore region, and saccate asci 27-44  $\times$  11.5-15.5  $\mu\text{m}$ , in a fascicle in the paraphysate locule. This fungus was described and illustrated as *Herpotrichiella spinifera* (Ell. & Ev.) Barr in Bigelow and Barr (1963). The specimens were recently re-examined, and short apical paraphyses



(periphysoids) were observed in the upper part of the locule. Such structures occur in other members of the Herpotrichiellaceae. The specimen from South Carolina cited in 1963 was incorrectly determined and is a representative of the next species. Additional collections of *H. spinifera* are now known from **Ontario**: Univ. of Toronto Exp. Forest, 8 miles south of Dorset, Haliburton Co., 8 Sept 1962, *Rogerson* 62-98 and 62-99 (NY); from **North Carolina**: Lake Johnson Park, Wake Co., 12 Nov 1972, *Menge* 622 (MASS).

The third species has somewhat thickened walls in the upper part of the larger ascocarp (104-190 (-220)  $\mu\text{m}$  diameter), scattered protruding cells or short setae over the upper wall, and oblong asci 40-55  $\times$  7-9  $\mu\text{m}$ . Empty asci are often found in the locule and their outlines may be misinterpreted as those of pseudoparaphyses. The upper region of the locule and apical pore bear short apical paraphyses. This fungus is also a species of *Herpotrichiella* and is identical with *Sphaeria porothenia* Berk. & Curt. The species was described from *Stereum* sp., Carolina, and was sent to Berkeley by Curtis as No. 2379. The original description reads: "Perithecia minute, scattered, each seated in a little facette; sporidia uniseriate, shortly oblongo-fusiform, rather obtuse at either end, triseptate. On the hymenium of some *Stereum*. Car. Inf. No. 2379." (Berkeley 1876). From a specimen labelled "*Sphaeria Porothenia* B. & C.! Ex Herb. Curt. In Hymen 'Stereo'" in NY, and from other collections the following description was prepared.

***Herpotrichiella porothenia*** (Berk. & Curt.) Barr, comb. nov.  
Figs. 5-7.

*Sphaeria porothenia* Berk. & Curt. in Berk., *Grevillea* 4: 142. June 1876.

*Melanomma porothenia* (Berk. & Curt.) Sacc., *Syll. Fung.* 2: 104. 1883.

*Leptosphaeria porothenia* (Berk. & Curt.) Berl., *Icones Fungorum* 1: 52. 1892.



*Sphaerulina porothenia* (Berk. & Curt.) Keissler, Ann. Nat. Mus. Wien 35: 6. 1922.

*Leptosphaeria stereicola* Ellis, Am. Nat. 17: 317. Mar. 1883.

Ascocarps immersed, usually in small depressions in host tissue, about 1/3 to 1/2 erumpent, dull black, rarely more erumpent to nearly superficial, 104-190 (-220)  $\mu\text{m}$  diameter, globose or nearly so, apex short papillate; wall brown, blackish above, of 2-3 layers of slightly compressed polygonal cells, somewhat thickened above and clypeal in aspect, with protruding cells or short 1- to 2-celled dark setae over upper part of wall; apical pore periphysoid, short apical paraphyses growing inward toward asci from apex of locule; externally at times with light brown hyphal coating extending into host tissues. Asci 40-55 (-60)  $\times$  7-9  $\mu\text{m}$ , oblong, slightly inflated at times, bitunicate, sessile, from sides and base of locule. Ascospores 10-14  $\times$  3-4  $\mu\text{m}$ , light dull brown, asymmetric, narrowly obovate, ends tapered, usually inequilateral, (0-, 1-, 2-) 3-septate, slightly constricted at mid septum, one globule in each cell, wall smooth, biseriate in the ascus.

In old basidiocarps of *Stereum bicolor*, *Stereum* sp., North America, Europe.

Material examined: NORTH AMERICA: Delaware: Newark, 7 Nov 1890, *Commons* 1722 (NY); Iowa: Decorah, 4 July 1882, *E. W. Holway* 142 (type specimen of *Leptosphaeria stereicola*) and three additional packets with similar collection data (one dated June 1882) (NY); South Carolina: Ex Herb. Curtis (authentic specimen) (NY); 3.2 mi. south of state line, 4 mi. south of Upper Falls of Whitewater River, Oconee Co., 14 Aug 1961, *Petersen & Rogerson* (with *Litschaueria corticiorum*) (NY, MASS). EUROPE: *C. Roumeguere*, *Fungi sel. exs.* 7356 (NY).

Ellis and Everhart (1892) distinguished *H. spinifera* with setose, partly erumpent ascocarps and shorter wider asci from *H. porothenia* (both under *Melanomma*) with glabrous, more nearly superficial ascocarps and narrower asci. The specimens of *H. porothenia* bear short setae over



the apex. For comparison, *H. spinifera* is illustrated in figures 8 to 10. These species of *Herpotrichiella* belong in the Herpotrichiellaceae of the Chaetothyriales.

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#### LITERATURE CITED

- BERKELEY, M. J. 1876. Notices of North American Fungi. *Grevillea* 4: 141-162.
- BIGELOW, H. E. & M. E. BARR. 1963. Contribution to the fungus flora of northeastern North America. III. *Rhodora* 65: 289-309.
- ELLIS, J. B. & B. M. EVERHART. 1892. The North American Pyrenomycetes. Newfield, N.J. 793 pp.
- HÖHNEL, F. VON. 1907. Fragmente zur Mykologie. 112. *Helminthosphaeria Corticiorum* v. H. n. sp. Sitzungsber. Kaiserl. Akad. Wiss. Math.-Naturwiss. Abt. 1, 116: 109-110.
- LUNDQVIST, N. 1972. Nordic Sordariaceae s. lat. *Symb. Bot. Upsal.* 20(1): 1-374.
- PARGUAY-LEDUC, A. 1961. Étude des asques et du développement de l'*Helminthosphaeria clavariarum* (Desm.) Fuck. ap. Munk. *Bull. Soc. Mycol. France* 77: 15-33.
- PETRAK, F. 1923. Mykologische Notizen 257. Über *Helminthosphaeria corticiorum* v. Höhn. *Ann. Mycol.* 21: 273-275.
- . 1940. Mykologische Notizen 874. Über die Gattung *Melanostigma* Kirschst. *Ann. Mycol.* 38: 199.

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